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Dam Safety National Dam Safety Program Visual Inspection Hydrology, Structural Stability

Eaton Brook Reservoir Dam Madison County West Eaton

ADSTRACT (Continue on reverse side if necessary and identify by block number)

This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization.

Examination of available documents and a visual inspection of the dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which need to be evaluated and remodied.

Madison Bontos New York.)E

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Additional hydrologic investigations are required to more accurately determine the site specific characteristics of the watershed. Using the Corps of Engineer's Screening Criteria for the initial review of spillway adequacy, it has been determined that the embankment would be overtopped by all storms exceeding the inflow resulting from 40% of the Probable Maximum Flood (PMF) or one half the PMF. A flood wave analysis, assuming a complete breaching of the embankment, inflicates that water surface levels downstream of the dam could reach depths which would pose significant danger to residents. The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean that there appears to be a serious deficiency in spillway capacity and if a severe storm were to occur, overtopping and failure of the dam could take place, significantly increasing the hazard to loss of life downstream of the dam.

It is, therefore recommended that within 3 months of the date of notification of the owners, a hydrologic investigation of the structure should be undertaken to determine the appropriate mitigating measures to be taken. Within 18 months of the date of notification, appropriate remedial measures should be completed. In the interim, a detailed emergency operation plan and warning system should be developed.

There are a number of additional deficiencies which should be amosted. Seepage at the documentees for and leakage in the abandoned that need to be investigated. Minor grading problems on the embankage in the corrected. The two gate valves on the service spillway that are leaking should be remained. These deficiencies should be a procted within 12 months of the date of notification.

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SUSQUEHANNA RIVER BASIN

EATON BROOK RESERVOIR DAM

MADISON COUNTY, NEW YORK INVENTORY NO. N.Y. 352

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM



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NEW YORK DISTRICT CORPS OF ENGINEERS
JANUARY, 1980

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM EATON BROOK RESERVOIR DAM I.D. NO. N.Y. 352 SUSQUEHANNA RIVER BASIN MADISON COUNTY, NEW YORK

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PHASE 1 REPORT NATIONAL DAM SAFETY PROGRAM

Name of Dam:

Eaton Brook Reservoir Dam (I.D. NY 352)

State Located:

New York

County:

Madison

Watershed:

Susquehanna River Basin

Stream:

Eaton Brook

Date of Inspection:

October 2, 1979

ASSESSMENT

Examination of available documents and a visual inspection of the dam did not reveal conditions which constitute an immediate hazard to human life or property. However, the dam has some deficiencies which need to be evaluated and remedied.

Additional hydrologic investigations are required to more accurately determine the site specific characteristics of the watershed. Using the Corps of Engineer's Screening Criteria for the initial review of spillway adequacy, it has been determined that the embankment would be overtopped by all storms exceeding the inflow resulting from 40% of the Probable Maximum Flood (PMF) or one half the PMF. A flood wave analysis, assuming a complete breaching of the embankment, indicates that water surface levels downstream of the dam could reach depths which would pose significant danger to residents. The spillway is, therefore, adjudged as seriously inadequate and the dam is assessed as unsafe, non-emergency.

The classification of "unsafe" applied to a dam because of a seriously inadequate spillway is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. It does mean that there appears to be a serious deficiency in spillway capacity and if a severe storm were to occur, overtopping and failure of the dam could take place, significantly increasing the hazard to loss of life downstream of the dam.

It is, therefore recommended that within 3 months of the date of notification of the owners, a hydrologic investigation of the structure should be undertaken to determine the appropriate mitigating measures to be taken. Within 18 months of the date of notification, appropriate remedial measures should be completed. In the interim, a detailed emergency operation plan and warning system should be developed.

There are a number of additional deficiencies which should be corrected. Seepage at the downstream toe and leakage in the abandoned conduit need to be investigated. Minor grading problems on the embankment should be corrected. The two gate valves on the service spillway which are leaking should be repaired. These deficiencies should be corrected within 12 months of the date of notification.

George Koch

Chief, Dam Safety Section New York State Department of Environmental Conservation

some Koch

NY License No. 45937

Approved By:

Col. Clark H. Benn

New York District Engineer

Data - 197/1/20



Overview
Eaton Brook Reservoir Dam
I.D. No. NY 352

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
EATON BROOK RESERVOIR DAM
I.D. No. NY 352
#104C-710
SUSQUEHANNA RIVER BASIN
MADISON COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase 1 inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam

The Eaton Brook Reservoir Dam is an earth dam with a gated service spillway and masonry auxiliary spillway channel.

The embankment is a maximum of 58 feet high and is 800 feet long. The crest is a minimum of 10 feet wide and a maximum of 18 feet wide. The embankment slopes are 1 vertical on 2.25 horizontal on the upstream face and 1 vertical on 3 horizontal on the downstream face. The lower portion of the upstream face is lined with rip-rap for wave protection.

The service spillway consists of four 9 inch diameter, gated inlet pipes and a 36 inch diameter masonry outlet conduit. The masonry conduit is 210 feet long. There is a gate house on the upstream slope of the dam which houses the control mechanism for the four gate valves. There is a well pit at the bottom of the gate house which connects the intlet and outlet conduits. Due to the inlet elevation, the service spillway can be used as a reservoir drain.

The auxiliary spillway is an ungated masonry channel at the southern end of the embankment. The bottom width of the channel varies from 19.5 feet near the crest down to 12.2 feet near the downstream end. The channel has vertical side walls.

There is also an abandoned 36 inch diameter masonry conduit whose outlet is located at about midslope on the southern end of the dam. The upstream portion of this conduit was sealed several years ago by concreting the gate control shaft.

b. Location

Eaton Brook Reservoir Dam is located in the town of Eaton, off Eaton Brook Road (County Route 52). Tuscarora Road (County Route 86) runs along the toe of the dam. The village of West Eaton is located approximately 1½ miles downstream of the dam.

c. Size Classification

The dam is 58 feet high and has a maximum storage capacity of 7886 acre-feet. Therefore, the dam is in the intermediate size category as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classifications

The dam is classified as "high" hazard due to the presence of several county roads, approximately 10 houses, and the village of West Eaton downstream of this dam.

e. Ownership

The dam is owned by the New York State Department of Transportation, Waterways Maintenance Subdivision. It is located in DOT-Region 2 whose headquarters are in Utica, New York. The addresses of the Main Office and Regional Office are as follows:

New York State DOT
Main Office-State Campus
1220 Washington Avenue
Albany, New York
Director: Mr. Joseph Stellato
(518) 457-4420

New York State DOT
Region 2 Office
Utica State Office Buil
207 Genesee Street
Utica, New York 13501
Frank W. Jennings

New York State DOT
Region 2 Office
Utica State Office Building
207 Genesee Street
Utica, New York 13501
Frank W. Jennings
Regional Waterways Maintenance Engineer
(315) 797-6120

f. Purpose of Dam

The dam was constructed to provide a water supply both for the village of Eaton and for the Erie Canal. The reservoir is still used as a feeder to the New York State Barge Canal system, and is also used for recreational purposes.

g. Design and Construction History

No design or construction records for the original construction were available. The dam was built in the mid 1800's. Plans for the construction of the auxiliary spillway in 1893 and for the replacement of the valves on the service spillway were available. A filter blanket was installed in 1978 to drain a wet area on the downstream slope. This filter blanket was designed by the New York State Department of Transportation (Soil Mechanics Bureau) and was constructed by the C. Murray Company. The plans which were available have been included in Appendix F.

h. Normal Operating Procedures

Water from the reservoir is released as required to feed the Barge Canal system (Erie Canal). During the Barge Canal's operating season (April to December), the water level in the reservoir is maintained approximately at the auxiliary spillway crest, within the constraints of the canal water requirements. The water level is dropped 3 to 5 feet below the auxiliary spillway crest during the winter months.

1.3 PERTINENT DATA

a.	Drainage Area (sq. mi)	7.96
b.	Discharge at Dam (cfs) Service Spillway at Maximum High Water Auxiliary Spillway Channel at Maximum High Water	102 1091
c.	Elevation (USGS Datum) Top of Dam Auxiliary Spillway Crest	1442.0 1434.93 1390.0
d.	Reservoir-Surface Area (acres) Top of Dam Auxiliary Spillway Crest	346 275
е.	Storage Capacity (acre-feet) Top of Dam Auxiliary Spillway Crest	7886 5714
f.	<pre>Dam Embankment Type: Earth and Rock fill</pre>	800

Crest Width
g. Service Spillway

Slopes(V:H)

Type: 4-9 inch diameter inlet pipes with valves, flow into well beneath gatehouse, 36 inch diameter masonry conduit 210 feet long flows out of well-Due to invert elevation, it can also act as a reservoir drain.

Varies from 10 to 18 feet

1 on 2.25

1 on 3

h. Auxiliary Spillway

Type: Masonry channel with vertical sidewalls
Channel descends in 8 steps between crest and outlet
Bottom Width (ft.) at Crest
at Outlet
12.2

i. Reservoir Drain - see Service Spillway

Upstream

Downstream

h. Appurtenant Structures

Gatehouse

Octagonal building containing control mechanism for the four service spillway valves. Ladder extends from below wood floor of house to the valves.

Abandoned Conduit

36 inch diameter masonry conduit with outlet on the downstream slope.

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The Eaton Brook Reservoir Dam is located in the Susquehanna Hills section of the Glaciated Alleghany Plateau physiographic province of New York State. This plateau is underlain by a great thickness of sedimentary rocks from the Devonian Era which lie almost horizontal. Severe trenching by streams and glacial erosion has carved the upland into a rugged terrain. The Susquehanna Hills rise to elevations of 1700 to 2100 feet between the rolling relatively narrow valleys. The surficial soils and features of the area are the result of glaciations during the Cenozoic Era, the last of which was the Wisconsin glaciation.

b. Subsurface Investigations

No subsurface records from the original construction of the dam were available. Several drill holes and test pits were progressed to provide information for the design of the downstream filter blanket. Information concerning these subsurface investigations have been included in Appendix F.

2.2 DESIGN RECORDS

No records were available concerning the original design of the dam. Some information which was used for the design of the downstream drainage blanket was available.

2.3 CONSTRUCTION RECORDS

No information was available concerning the original construction of the dam. Contract plans for the repair work done in 1978 were available and have been included in Appendix F.

2.4 OPERATION RECORDS

Reservoir level readings and gate opening data are taken daily.
Records are kept in the Regional Waterways Maintenance Office in Utica.

2.5 EVALUATION OF DATA

The data presented in this report was obtained from the Department of Environmental Conservation files and from the Department of Transportation Regional Waterways Maintenance Office in Utica. While information concerning the original construction of the dam was extremely limited, it appears that the data which was available was reliable and adequate for Phase 1 inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Eaton Brook Reservoir Dam was conducted on October 2, 1979. The weather was sunny and the temperature was in the seventies. At the time of the inspection two of the valves controlling flow in the service spillway were partially opened and the other two were closed. The water level in the reservoir was approximately four feet below the auxiliary spillway crest.

b. Embankment

Inspection of the embankment revealed several deficiencies. Seepage was noted in one area near the downstream toe on the northern end of the dam beyond the limits of the filter blanket. This seepage was emerging from the slope and flowing into a drainage ditch which ran along the toe. This flow may be seepage from the dam or it may be ground water flow from the hillside to the north of the dam. Further investigation is required to identify the source of this seepage and to determine whether a method of treatment is required.

Several other deficiencies were noted. There were several animal burrows on the downstream face outside the limits of the filter blanket. The embankment crest was slightly irregular with several depressions noted. There was some sloughing and settlement near the top of the upstream face above the level of the laid up stone slope protection.

c. Service Spillway

Visual inspection revealed that the service spillway conduit was in good condition. Only minor leakage near the upstream end and some mortar missing from the joints were noted. The four 9 inch valves were closed during the inspection shutting off flow through the conduit. Inspection revealed that the right two gates (looking downstream) were leaking, while the left two gates sealed tightly. The gate operation machinery located in the gate house on the dam crest was in good condition.

d. Auxiliary Spillway

The auxiliary spillway channel was in satisfactory condition. Portions of the sidewalks and channel bottom have recently been mortared and repointed. Some sections still need to have these repairs made. Voids several inches deep were noted in the sections which needed repointing. Seepage was noted emerging from one of the steps near the downstream end of the dam. Based on the location of this seepage, it appeared to be caused by a spring from the hillside.

e. Downstream Channel

The outlet channel was in satisfactory condition. Immediately downstream of the outlets to both the service and auxiliary spillways, the stream passes under County Route 86 in an 8 foot diameter corrugated metal pipe. This pipe was recently installed replacing a smaller pipe. Downstream of the pipe, the channel was lined with rip-rap for approximately 50 feet. Beyond that point, the natural channel

banks are overgrown with brush and trees.

f. Reservoir

There were no signs of soil instability in the reservoir area.

g. Appurtenant Structures

Gatehouse

The gatehouse was in satisfactory condition. The house provided adequate protection for the gate control mechanism. The exposed concrete at the base of the gate house (on the upstream slope of the embankment) showed some signs of deterioration.

Abandoned Conduit

A small amount of flow (approximately 1/2 inch deep in the invert) was observed at the outlet of this conduit. Further investigation is required to determine the source of this flow.

3.2 <u>Evaluation of Observations</u>

Visual inspection revealed several deficiencies on this structure. The following items were noted:

- 1. Seepage emerging at the downstream toe beyond the limits of the filter blanket.
- 2. Animal burrows on the downstream slope.
- 3. Slight irregularities in the embankment crest.
- 4. Minor sloughing above the slope protection on the upstream slope.
- 5. Leekage in two of the valves controlling flow in the service spillway.
- 6. Joints between blocks on the auxiliary channel which need to be repointed.
- 7. A small amount of flow at the outlet to the abandoned conduit.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURE

4.1 Procedure

This reservoir is operated as a feeder to the New York State Barge Canal System. Gate openings are set daily according to the water requirements of the Barge Canal. The owner attempts to maintain the water surface at the auxiliary spillway crest during the navigation season.

4.2 Maintenance of Dam

The dam is visually inspected annually by the Department of Transportation. The grass on the enbankment is mowed annually. Other minor maintenance functions are performed as required.

4.3 Warning System In Effect

No apparent warning system is present.

4.4 <u>Evaluation</u>

The operation and maintenance procedures for this dam appear to be generally satisfactory. Increased maintenance efforts are required to correct the deficiencies which exist.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 Drainage Area Characteristics

Delineation of the watershed draining into the reservoir pool area was made using the USGS 7.5 minute quadrangles for West Eaton and Morrisville, New York. The drainage area is 7.96 square miles and consists of open fields and wooded land. Relief in the drainage area is moderate to steep with slopes ranging from 5 per cent in the western portion of the watershed to 11 per cent in the hills to the south of the reservoir.

5.2 Analysis Criteria

The analysis of the floodwater retarding capability of this dam was performed using the Corps of Engineers HEC-l computer program, Dam Safety version. This program develops an inflow hydrograph based upon the "Snyder Synthetic Unit Hydrograph" and then uses the "Modified Puls" flood routing procedure. The spillway design flood selected for analysis was the PMF in accordance with the Recommended Guidelines of the U.S. Army Corps of Engineers.

5.3 Spillway Capacity

The dam has a service spillway conduit which can also function as a reservoir drain. The service spillway operates under orifice flow conditions with the four 9 inch diameter pipes being the controlling factor. The analyses assumed that all of the four 9 inch diameter gates were fully opened to provide the maximum spillway capacity. The auxiliary spillway channel was analyzed as a broad-crested weir with a discharge coefficient (c) of 3.087.

The spillways do not have sufficient capacity for discharging the peak outflow from either the Probable Maximum Flood (PMF) or one half the PMF. For the PMF, the peak inflow is 13,231 cfs and the peak outflow is 11,546 cfs. For one half the PMF, the peak inflow is 6,616 cfs and the peak outflow is 2899 cfs. The computed spillway capacity for a water surface elevation at the top-of-dam is 1,193 cfs.

5.4 Reservoir Capacity

Storage capacity of the reservoir between the auxiliary spillway crest and the top of the dam is 2172 acre feet, which is equivalent to a runoff depth of 0.43 inches over the drainage area. The total storage capacity of the dam is 7886 acre feet.

5.5 Floods of Record

The maximum known flood is believed to have occurred as a result of Hurricane Agnes on June 23, 1972. At that time, the water level rose to 1.5 feet above the auxiliary spillway crest with all of the valves on the service spillway fully open. The calculated discharge for this flood is 203 cfs.

5.6 Overtopping Potential

Analysis using the PMF and one half the PMF indicates that the dam does not have sufficient spillway capacity. For a PMF peak outflow of 11,546 cfs, the dam would be overtopped to a computed depth of 2.53 feet. For the peak outflow from one half the PMF, the depth of overtopping would be 0.75 feet. The dam would be overtopped by all storms exceeding 40% of the PMF inflow.

5.7 Evaluation

Using the Corps of Engineer's screening criteria for initial review of spillway adequacy, it has been determined that the dam would be overtopped by either the PMF or one-half the PMF. The total spillway capacity when the water surface is at the top of the dam is 10% of the outflow from the PMF and 41% of the outflow from one half the PMF. A flood wave analysis, assuming complete breaching of the dam, indicates that the water surface could reach depths which pose a significant danger to residents.

The spillway is, therefore, adjudged to be seriously inadequate and the dam is assessed as unsafe, non-emergency.

SECTION 6: STRUCTURAL STABILITY

6.1 <u>Evaluation of Structural Stability</u>

a. Visual Observations

Visual observations of the structure did not reveal any signs of major distress. Minor sloughing of the upstream slope above the level of the slope protection was observed. This minor instability was probably caused by wave action during times of high water.

b. Design and Construction Data

No information was available concerning the original design or construction of this dam. Plans for the modifications to the spillways made during the 1890's were available. The only other information available concerned the 1978 modifications which involved placing a filter blanket on the downstream face to drain several wet areas.

c. Seismic Stability

The dam is located in Seismic Zone 2. Since there was not enough data available to determine the parameters of embankment materials, it was not possible to perform a seismic stability analysis. The dam did, however, appear to be stable.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 Assessment

a. Safetv

The Phase 1 inspection of the Eaton Brook Reservoir Dam revealed that the spillway is seriously inadequate and outflows from either the PMF or one-half the PMF would overtop the dam. This overtopping could cause breaching of the dam and the resulting floodwave would significantly increase the hazard to downstream residents. For this reason, the dam has been assessed as unsafe, non-emergency.

There are several other deficiencies on this structure, such as seepage on the downstream toe and through the abandoned conduit, minor sloughing on the upstream slope and leakage in two of the valves on the service spillway which need further investigation and remedial work. These deficiencies could present a hazard unless appropriate actions are taken.

b. Adequacy of Information

The information which was available for the preparation of this report was generally adequate. Information concerning the original construction of the embankment was limited, but several borings and test pits progressed by DOT provided some information concerning the embankment material.

Need for Additional Investigations

Since the spillway was assessed as seriously inadequate, additional hydrologic/hydraulic investigations are required to more accurately determine the site specific characteristics of the watershed.

Investigations into the causes of seepage on the downstream slope and through the abandoned conduit are also required.

Urgency

The additional hydrologic/hydraulic investigations which are needed should be commenced within 3 months of the date of notification of the owner. Within 18 months of the date of notification, appropriate remedial mitigating measures should have been completed.

The other deficiencies outlined in the report should be corrected within 1 year of the date of notification of the owner.

7.2 Recommended Measures

- a. After the hydrological investigation has been completed, mitigating measures dealing with the seriously inadequate spillway capacity should be determined.
- b. Seepage emerging from the downstream toe beyond the limits of the filter blanket should be investigated and if it is found necessary, appropriate remedial measures should be taken.
- c. The leakage in the abandoned conduit should be investigated and corrected.
- d. The gate valves on the service spillway which are leaking should be repaired.

-11-

- e. Minor grading problems, such as slight irregularities in the embankment crest, minor sloughing on the upstream face, and animal burrow holes on the downstream slope, should be repaired.
- f. The joints between blocks on the auxiliary spillway which need repointing, should be repaired.

APPENDIX A

PHOTOGRAPHS





Downstream face of dam



Upstream face on southern end of dam - entrance to auxiliary spillway



Auxiliary spillway crest - looking downstream



Auxiliary spillway crest - looking upstream



Auxiliary spillway channel looking downstream



Joints in need of repointing on auxiliary spillway channel



Downstream portion of auxiliary spillway channel



Seepage from hillside on second step from bottom of auxiliary spillway channel



Outlets to service spillway conduit and auxiliary spillway channel



Outlet to abandoned spillway conduit

APPENDIX B VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1)	Basic Data						
	a.	General					
		Name of Dam EATON BROOK DAM					
		Fed. I.D. # 357 DEC Dam No. 104C-710					
		River Basin Susquenanna					
		Location: Town EATON County MADISON					
		Stream Name EATON BROOK					
		Tributary of					
		Latitude (N) 41° 51.8′ Longitude (W) 75° 41.3′					
		Type of Dam Earth					
		Hazard Category C					
		Date(s) of Inspection 10/2/79					
		Weather Conditions SUNNY - 70 s					
		Reservoir Level at Time of Inspection 44" BELOW AUXILIARY CREST					
	b.	Inspection Personnel R. WARRENDER : W. LYNICK					
	c.	Persons Contacted (Including Address & Phone No.) DON ROHER - (DAM					
		CARETAKER					
	d.	History:					
		Date Constructed ? Accor 1837 Date(s) Reconstructed 1978					
		Designer Q.O.T. Soil MECHANICS BUREA					
		Constructed By C. MURRAY Co.					
		Owner NY. S O O. T. WATERWAYS - REGION Z UTICA					

a.	Char	acteristics
	(1)	Embankment Material Rock & EARTH FILL
	(2)	Cutoff Type NoNE
	(3)	Impervious Core None
	(4)	Internal Drainage System Nove
	(5)	Miscellaneous
b.	Cres	
	(1)	Vertical Alignment Somewhat (RREGULAR - SEVERAL DEPRESSIONS
	(2)	Horizontal Alignment O WAY
	(3)	Surface Cracks None
	(4)	Miscellaneous
c.	Upst	ream Slope
	(1)	Slope (Estimate) (V:H) an Z
	(2)	Undesirable Growth or Debris, Animal Burrows None
	(3)	Sloughing, Subsidence or Depressions Same Scaughing OF Scape ABOVE THE LEVEL OF THE SCAPE PROTECTION.

Embankment

2)

(4)	Slope Protection LAID UP STONE - STARTS ABOUT 10' DOWN FROM CREST.
(5)	Surface Cracks or Movement at Toe UN OBSERVABLE
Down	stream Slope
(1)	Slope (Estimate - V:H)
(2)	Undesirable Growth or Debris, Animal Burrows Some WOODCHUCK HOLES IN AREAS WHERE THERE IS NO BLANKET.
(3)	Sloughing, Subsidence or Depressions Nove
(4)	Surface Cracks or Movement at Toe None
(5)	Seepage NONE NOTED - SINCE BLANKET HAS BEEN INSTALLE THERE HAS BEEN NO FLOW IN CMP PEFORATED DRAIN PIPE.
(6)	External Drainage System (Ditches, Trenches; Blanket) FILTER CLOTA # Small Stone BLANKET COVER MOST OF SLOPE
(7)	Condition Around Outlet Structure OKAY
	Seepage Beyond Toe DRAMAGE DITCH RUNS ALONG TOE - FLOW IN THIS D
Abut	FROM WATER COMING OFF HILL, ONE SPOT (APPROX, & WAY DOWN HILL FROM NORTH E HAS WATER COMING OUT OF UPSTREAM SIDE OF DITCH. SOME FLOW & GROUND WAS MENTS - EMBANKMENT CONTACT SOFT FOR Z'DIAMETER AROUND SEEP. COULD BE FROM OFF HILL.

		(1)	Erosion at Contact None
		(2)	Seepage Along Contact None
3)	Dra	inage	System
	a.	Desc	ription of System FILTER BLANKET WITH PERFORATED CMP DRAIN
	b.	Cond	ition of System Gaca
	c.	Disc	harge from Drainage System None
4)	Ins Pi	trume ezome	ntation (Momumentation/Surveys, Observation Wells, Weirs, ters, Etc.)
			None
			
			

5)	Res	ervoir
	a.	Slopes OKAY
	b.	Sedimentation None
	c.	Unusual Conditions Which Affect Dam No. OF CAMPS ON RESERVOIR
6)	Are	a Downstream of Dam
	a.	Downstream Hazard (No. of Homes, Highways, etc.) COUNTY ROAD, A SMALL
		DAM' 5-10 HOUSES & TRAINERS IN WEST EATON
	b.	Seepage, Unusual Growth None
	c.	Evidence of Movement Beyond Toe of Dam None - ROAD RUKS ALONG TOE
	đ.	Condition of Downstream Channel 8' CMP UNDER COUNTY ROAD CHANNEL BANKS SLIGHTLY OVERGROWN BEYOND ENDS OF CO. ROAD
7)	Spi	11way(s) (Including Discharge Conveyance Channel)
	a.	General
	b.	Condition of Service Spillway

	c.	Condition of Auxiliary Spillway OKAY - PORTIONS OF SINEWALLS
		AND BOTTOM HAVE RECENTLY BEEN MOTARED FREBDINTEL
		THERE IS SOME NEAR THE UPPER PART OF CHANNEL
		WHICH STILL NEEDS TO BE DONE - NO MOTAR IN SOME
		OF THESE JOINTS
	d.	Condition of Discharge Conveyance Channel SHORT DISTANCE TO
		8' CMP GOING UNDER ROAD - CHANNEL FOR THIS
		STRECK IS ALL MASONRY
a >	ъ.	ervoir Drain/Outlet - SAME AS SERVICE SPILLWAY
8)	Kes	
		Type: Pipe Conduit 36"-MASONRYOther
		Material: Concrete Metal Other -Masoner
		Size: 36" Length
		Invert Elevations: Entrance / 1390.0 Exit 1379.5
		Physical Condition (Describe): Unobservable
		Material: MASONRY
		Joints: OKAY - SOME MOTAR MISSING Alignment GOOD
		Structural Integrity: APPEARS GOOD
		Hydraulic Capability:
		nydraulic dapability.
		Means of Control: Gate Valve Uncontrolled
		Operation: Operable Other
		Present Condition (Describe): GOOD- OPERATED AT TIME
		OF INSPECTION - LEARAGE FROM Z OF 4 VALUES
		A CONTRACTOR AND

APPENDIX C

HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS HYDROLOGIC AND HYDRAULIC ENGINEERING DATA

AREA-CAPACITY DATA:

		Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-it.)
1)	Top of Dam	1442.0	346	7886
2)	Design High Water (Max. Design Pool)			
3)	Auxiliary Spillway Crest	1434.93	275	5714
4)	Pool Level with Flashboards			
5)	Service Spillway Greet INVERT	0.0961	*************	

DISCHARGES

	DISCHARGES	Volume (cfs)
1)	Average Daily	-
2)	Spillway @ Maximum High Water	1193
3)	Spillway @ Design High Water	
4)	Spillway @ Auxiliary Spillway Crest Elevation	95
5)	Low Level Outlet	
6)	Total (of all facilities) @ Maximum High Water	1193
7)	Maximum Known Flood	203

CREST:		ELEVATION: 1442
Type: EARTH		
Width: 10-18'	Leng	gth: <u>800′</u>
Spillover AUXILIARY SA	LLWAY CHA	NNEC
Location SOUTHERN E	END OF DAM	· · · · · · · · · · · · · · · · · · ·
SPILLWAY:		
PRINCIPAL		EMERGENCY
1390.0	Elevation	1434,93
CONDUIT	Туре	CHANNEL - MASONRY
	Width	19,5/
· <u>I</u>	ype of Control	
	Uncontrolled	
	Controlled:	
4-9" DIAMETER GATE VALVE. (Fla	S Type shboards; gate)	. •
	Number	
	Size/Length	**************************************
In		
	icipated Length	·
	Chute Length	
Height & App	Between Spillway roach Channel In (Weir Flow)	v Crest

OUTLET STRUCTURES/EMERGENCY DRAWDOWN FACILITIES:	
Type: Gate Sluice Conduit V Penstock	
Shape: 4-9" DIAMETER VALVES FLOWING INTO PIT-THEN	
Shape: 4-9" DIAMETER VALVES FLOWING INTO PIT-THEN ALONG 36" DIA CONDUIT Size:	•
Elevations: Entrance Invert (390.0	,
Exit Invert1379.5	
Tailrace Channel: Elevation	
HYDROMETEROLOGICAL GAGES:	
Type: NONE	
Location:	
Records:	
Date -	
Max. Reading -	
FLOOD WATER CONTROL SYSTEM:	
Warning System: NoxE	
Method of Controlled Releases (mechanisms): VALVES ARE OPERATED TO RELEASE THE	
AMOUNT OF WATER REQUIRED,	

INAGE A	IREA: 7.96 SQM1	
INAGE 8	BASIN RUNOFF CHARACTERISTICS:	
Land U	ISE - Type: OPEN FIELDS - WOODED LANDS	
	in - Relief: MODER ATE TO STEEP	
Surfac	ce - Soil:	
Runoff	Potential (existing or planned extensive alterations to exi (surface or subsurface conditions)	sting
	NONE	
		t or futur
Potent	ial Sedimentation problem areas (natural or man-made; preser ${\cal N}$ on ${\cal E}$	
	None	
	None	
Potent	None ial Backwater problem areas for levels at maximum storage caincluding surcharge storage:	pacity
Potent	None ial Backwater problem areas for levels at maximum storage caincluding surcharge storage: None - Floodwalls (overflow & non-overflow) - Low reaches along	pacity
Potent	None ial Backwater problem areas for levels at maximum storage caincluding surcharge storage: None - Floodwalls (overflow & non-overflow) - Low reaches along Reservoir perimeter:	pacity
Potent	None ial Backwater problem areas for levels at maximum storage caincluding surcharge storage: None - Floodwalls (overflow & non-overflow) - Low reaches along Reservoir perimeter: Location: Elevation:	pacity
Potent	None ial Backwater problem areas for levels at maximum storage caincluding surcharge storage: None - Floodwalls (overflow & non-overflow) - Low reaches along Reservoir perimeter: Location: Elevation:	pacity

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	计格特殊性 医甲状腺素		法外外的证明的	*	* *	***		***	* * *	*	****
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STATION IN PLAN IN RATIO 1

END-GF-PERTOD HYDFOGRAPH OPPINATES

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300		9.46		. G			900		3 (663	1154	1097	933	767.	40.4	506		ur.	τ.	-7	5540	5093	5,543	5559	5670	6775	7300	٠,٠	٠,		2	٠	~	щ	1434	1434,6	434.	4344	4344	4364	4.34.	434	1436.6	1441.8	1641.4	1440,3	143015	1436.4	1437,6	
WO 19TOO	. •	25.0			6.5	• · ·	• •		6.	566.	1147.	1111.	950	742.	437	517,	STURAGE	5690	5659	5623.	5590	\$605	5586.	5558	5646	0586	7867	7705	, coc.	100°	1400	•67/0	0650	STAGE	o	1434,8	14 14 .7	14.14.5	1434.6	1434.5	1434.4	1434.7	143H+C	1441,7	1441,5	1440.5	1439.4	1438.5	1437.7	
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	50	5.5	500	50	5.5			n 4	• n	304	1167	1135	9:34	914	999	539	1	5703	5667	5630.	5594	\$603	591	501	614	2.5	7697	759	77	7000	000.	2110	6233		1435.0	14.14.8	1434.7	1434.6	1434.6	1434.6	1434,4	1434.6	1436.6	1441.4	1441,6	1440,7	1439.6	1436,6	1437,6	
	95.	 				7				3.7	10/2	. 1140.	1001	2.00	27.3	521.	:	5737.	50/1.	5036	5577.	5004	5574	1550	7044	0.504	76.15	7787	77, 75		* * * * * * * * * * * * * * * * * * * *	• • • • • • • • • • • • • • • • • • •	6547.		1435.0	1430.0	143467	1434.12	1,430.	143414	1434,	1434 0	1430.00	144112	1441	1440	1439.1	143011	1437.5	
	43.	3.0				4			• • •	245	1036	1154,	1318	547	743	562.	- 1	5711.	5674.	5637	26.00	5002	5547	5560	5541	5.7.70	2000	7.3611.	4.4.	2000		_	6571		1435.0	1434.9	1434.7	1434.6	1434.0	1434.6	1434.5	1434.5	14.15.9	_	-	1440.9	1430,68	1430,8	ä	
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PEAK PUTFLEM IS 1166. AT THE 49,00 HOURS

FFAT 6-FINIR 24-HDUR 72-FINUR TOTAL VOLUME CFS 1160- 11 6- 551- 4-5- 64531-CFS 73, 72, 27- 13- 18-7-

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Mile Armedic opening &	6.28	159,62	2667.	701. 2327, 3265, 3289.
Additional	0,24	150,45	2647	3265
Both Commen	4.45	112,05	1867,	2327
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L PLAN LY RATIO 2 STATION

FND-DF-PERTOD HYDROGRAPH ORDINATES

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	95.	95.	35	90	25	95.	95.	201.	1136.	1937.	1128	6211	, , ,	437	517.			2005	2040	5610.	5 606.	5621.	2556	5606.	5903	7762	8033	7744.	7365	7013.	6724.	06490		1434.9	1434.7	1434,6	1434.6	1434.7	1434.6	1434.6	1435.7	1441.6	1442.4	1441.6	1440.5	439.4	1438.5	1000
	5.5	.56	6.00	6.5%	95.	95	95.	161	1046.	2145	7711	0.40		* C Y Y	528			3000	* * * * * * * * * * * * * * * * * * *	>013	5601.	5622.	5599.	5597.	, 0.684	7566.	4060.	.0777	7404	7045	6750.	65114		1434.9	1434,8	1434.6	1+34.6	1434.7	1434.6	1+34.5	1435,4	1441.1	1442.5	1441.7	1440.6	1439.5	1434.5	
	95.	95	95	6.5	ر ۶۰	95.	9.6	129.	942	2365.	1160.	000	7 6		539.		0 0 1 1		0000	1 1 10	2537	\$623.	5005	5590.	5775.	7346.	6087.	7412.	7442.	7078.	6777.	6533.		1434.9	1434.8	1434.6	1434,6	1434,7	1434.6	1434,5	1435,2	1440.4	1442.6	1441,8	1440.7	1439.6	1438.6	7 227
										• • •	•		-		550	9																6555	u	1434.0	1434,8	1434.7	1434.6	1434,7	1434,0	1434,5	1433,1	1433.7	1442.0	1441,	1440,4	1437	1438.7	2
Jarun	.50	45.	95,	98	. 56	95.	95.	95.	712.	2777.	1107.	1024	846.	(3)	562.	A ACT S	100	0000	• 0000°	4,790	\$1.5C	5/23	> 6.08.	5543	5792.	0.474	9134.	7873.	7519.	7146.	6833.	6578.	STAG	1434.9	1434.H	1434.7	1434.6	1434.7	1434.6	1434.5	1435.0	1478,9	1442.7	1442,0	1440,9	1434.3	1433.8	0 7671
	95.	95.	95.	95.	95.	95.	95.	95.	596.	2039	1222.	1045	36.4	706.	574.																	6461.		1434.9	1434.8	1434.7	1434.6	1434.7	1434.0	1434.5	1434.9	1478.2	1.42.7	1992.0	1441.0	1439,9	1438.9	1 8171
	45.	95	.50	956	45.	95.	956	95.	491.	2679	1312.	1060	0.1.0	720	586.		577.6	7.494	1004	1000	0.000	0.700	6100	5554	5660	0.441.	H145,	1927	1,596	7217,	*05L0	6624.		1435.0	1434 8	1434.1	1434.6	1434.7	1434.6	14.34.5	1+34.8	1437,5	1442.7	14471	14:1.2	1446.0	1.43.640	1676
	.56	. 66	9.5	44.	.44	45.	٠٢٧.	45.	50.7	2020.	1452.	1077	.15.3	735	593		5707.	17.43					0.00	. Dr. CC	56.44.	• 2020	4116.	1753.	7033.	7255.	0750	6646.		1432.0		147,661	14.5.	2.47.51	143040	1434.5	14340/	1430.43	1442,1	1442.4	1641,3	10001	1437,1	1430.7
	£3.	95	.75	95,	95.	95.	.75.	0.5.	317.	2050	1577.	1095.	910	75.0	0110		5711.	57.78	67.74		2000	107	100		5633.	6114.	90414	1979	1671.	7290.	6950+	6673.	:	0,41,41	1454.	1 4 34 4 7	1404.4	1434.0	1434.5	1434.0	1434.1	1436.4	1442.5	1442,3	1441,4	1447.42	1430.2	1430.3

2899, AT TIME 47,00 HOURS PEAK OUTFLOW IS 24-H40R 72-H10R FD1AL VOLUME 1501, 572, 62867, 17: 16: 6-H 1UP 22461 2461 PFAK 2879. CFS CFS

トライナングの おがらをつる いき	F.O. A	204.63	1;14, 2581, 3405, 3424,	4554	
	0.05	103.41	3405	4200	
	(C*n	154.40	2581.	1163.	
	20.7	60.67	1;14.	1.174.	
• 2	5 31,761		AC-FT	THEFT CO II	

STATION IN PLANT IN RATIO 3

END-OF-PERIOD HYDRIGRAPH ORDINATES

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17.0 14.1 17.0 12.4 17.0		٠ ۲.	95	25.	S		103.	112.	124.	961
10.0 10.1 10.2 10.6 10.24 10.24 10.26 10.00	15.	17.0	 	20%	234.		311.	370.	440.	242
9.7., 2056, 707, 103, 1723, 17412, 4732, 1772, 1705, 1705, 1707, 1	662.	• 6.C.F.	9.1.	1172.	3845	_	10241.	11428.	11546.	11007.
2479, 1174, 1173, 1154, 1179, 11279, 1120, 1120, 1124, 1179, 1127, 1120, 1124, 1775, 1770, 1745, 1179, 1179, 1120, 1120, 1770, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 175, 1770, 17	10125,	31.77.	.0863	7.075	51.02	•	4732.	4142.	3630.	3180.
1154 1157 1121 1104 1046 1046 1047 1049 1051 1054 1055 1047 1055 1057	2802	2470.	21 # 2.	1944,	1723.	_	1395	1279	1200.	1162.
97. 966	1100	1153.	1157.	1121.	1104.	_	1058.	1049.	1031.	1012.
# July	963	6.7.6	950	237	919.		. 34.	867	850.	934.
570.4 570.5 570.1 569.7 560.4 591. 570. 570. 570. 570. 570. 570. 570. 570	K17.	3.1	765.	770.	755		725.	711.	696	22.5
\$704, \$705, \$671, \$682, \$605, \$684, \$688, \$685, \$685, \$687,	699	625	642	629	616.		591.	579.	567	556.
5764 5705 5701 5685 5685 5685 5642 5647 5648 5655 5655 5655 5642 5647 5648 5655 5655 5655 5642 5647 5647 5647 5647 5655 5655 5644 5702 5707 5712 5715 5717 5717 5655 5744 5718 5717					STURA	ير.				
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5042, 5038, 5032, 5040,	7.77		16.73	27.40	2444	1000		1000		α
5617. 5627. 5627. 5610. 5616. 5615. 5625. 5637. 5637. 5616. 5617. 5617. 5616. 5717. 5717. 5717. 5717. 5717. 5717. 5717. 5718. 5719. 5718. 5719. 5718. 5719. 5718. 5719. 5718. 5719.				20.00	6633	2004	• 40 C	1000	. 000	• • • • • • • • •
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安安州科学学会会委员 计算条件公司的证明 英格比特拉曼英语特殊

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MAKIMUM STUPAGE . 2.

MAXINUM STAGE IS 1397.1

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STURAGE	102,26	0°00 120°42	137,62	8.04	16,26	27.01	29.93	53,96 251,14	69.03 276.55	85.12 302.99
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STAGE	1340,000	1334.14	1400,38	1406.53	14.12.37	1418.21	1424.05	1429.69	1435.74	1441,58
FLC.J	0. 3266793.03	350,55 41350,27,31	15260,72	9912199	232046.35	461844,34	814304.41 10124123.50	461844.34 814304.41 1277451.40 1839880.59 2502446.91 8697414.32 10124123.50 11671007.68 13340989.38 15137000.13	1839880.59 1334 ₀ 989.38	2502446.91 15137000.13
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> 1.395.3 MAXINUM STAGE 15

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LIUTELDW 12, 175, 18, 170, 181, 170, 181, 170, 181, 170, 182, 181, 170, 182, 181, 177, 182, 183, 183, 183, 183, 183, 183, 183, 183	187, 6, 181, 175, 18, 170, 23, 180, 170, 23, 180, 170, 23, 180, 180, 180, 180, 180, 180, 180, 180	187, 6, 181, 175, 18, 170, 170, 18, 170, 181, 170, 181, 170, 181, 181, 170, 181, 181, 181, 181, 181, 181, 181, 18	0. 137. 6. 181. 175. 18. 170. 23. 155. 37. 151. 41. 147. 24. 150. 37. 155. 41. 147. 40. 135. 56. 132. 60. 129. 34. 121. 64. 120. 77. 118. 74. 115. 35. 160. 160. 77. 160. 92. 93. 36. 36. 37. 100. 115. 121. 37. 163. 228. 272. 305. 376. 439. 41. 37. 4183. 1153. 1153. 1153. 312. 3636. 7654. 10211. 1164. 3517. 312. 372. 372. 305. 367. 3617. 440. 179. 6192. 5434. 4721. 4162. 3517. 244. 2158. 195. 166. 1286. 1286. 1184. 117. 1121. 1137. 1651. 166. 105. 106. 117. 1121. 1137. 166. 156. 106. 106. 106.	0. 137. 6. 181. 175. 18. 170. 23. 155. 37. 151. 41. 147. 23. 155. 37. 151. 41. 147. 24. 150. 37. 151. 41. 147. 25. 135. 56. 132. 60. 129. 26. 120. 77. 118. 74. 115. 27. 111. 40. 109. 92. 98. 27. 97. 97. 97. 98. 92. 98. 28. 27. 97. 97. 98. 98. 98. 38. 101. 97. 100. 115. 121. 412. 183. 228. 272. 305. 376. 439. 412. 1179. 5436. 1554. 1153. 1154. 1154. 213. 2156. 1955. 1706. 1561. 1296. 1184. 214. 1121. 1137. 1065. 1066. 1015. 214. 116. 116. 106. 1164. 106. 214. 116. 116. 106. 106. 1164. <td>187, 6, 181, 175, 18, 170, 170, 187, 189, 170, 189, 189, 189, 189, 189, 189, 189, 189</td> <td>12. 175. 151. 556. 132. 71. 118. 82. 92. 92. 92. 92. 92. 92. 92. 92. 92. 9</td> <td>187, 6, 181, 175, 18, 170, 177, 181, 170, 181, 170, 181, 170, 181, 181, 181, 181, 181, 181, 181, 18</td> <td>187, 6, 181, 175, 18, 170, 177, 18, 177, 18, 177, 18, 177, 18, 177, 189, 189, 189, 189, 189, 189, 189, 189</td> <td> 197, 197, 191, 175, 18, 170, 181, 170, 181, 181, 170, 181, 1</td> <td> 197, 197, 191, 175, 18, 170, 23, 159, 33, 155, 37, 151, 41, 147, 44, 159, 53, 155, 56, 132, 53, 120, 71, 118, 74, 115, 74, 111, 40, 101, 97, 97, 97, 74, 111, 40, 101, 97, 97, 74, 112, 101, 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41. 177. 44. 157. 64. 120. 135. 56. 132. 60. 129. 77. 111. 65. 120. 71. 118. 74. 115. 77. 151. 152. 150. 97. 99. 99. 99. 99. 97. 100. 115. 120. 77. 153. 213. 226. 272. 305. 115. 120. 11532. 1 77. 153. 177. 1179. 5336. 7654. 1021. 11439. 11532. 1 244.2. 2160. 1955. 1706. 1561. 1360. 1296. 1184. 1183. 1195. 1296. 1184. 1183. 1195. 1296. 1184. 1195. 1296. 138	187	187	UUTFLOW 234 160, 33 155, 37 151, 41 177, 45 160, 129, 151, 41, 147, 147, 151, 41, 147, 151, 41, 147, 151, 41, 147, 151, 41, 147, 151, 41, 147, 151, 41, 147, 151, 41, 147, 151, 41, 151, 151, 151, 151, 151, 151,	187 197 187 170	187 197 181 175 18 170	197	197 197	UUTFLOH 24. 187, 4. 1181, 175, 18, 175, 18, 170, 18, 170, 18, 18, 170, 18, 18, 170, 18, 18, 18, 18, 18, 18, 18, 18, 18, 18	137, 6, 137, 6, 115, 175, 18, 170, 170, 170, 170, 170, 170, 170, 170	137, 6, 137, 6, 115, 12, 115, 116, 170, 170, 170, 170, 170, 170, 170, 170	UUTFLOW 2	Colora C	137. 137. 131. 175. 18. 177. 170. 1

13,1,9	1399.0	1354.0	1395,2	13651	1395.0	1355.0	1304.9							
1374,7	1327,2	1326,1	1375,2	1375,1	1395,3	1395,0	1304.9							
13 14 61	1300.5	1306.3	1305.2	1305.1	1375.1	1395.0	1394.9	VOLUME	181810.	5148.	1.7.71	449.73	7513.	9267
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1302.3	13-6,2	1377.1	1395.4	15751	1305.1	1375.0	1394.9	~				_		. £.016.
1372.6	1375.2	1337.5	1375.5	1375.2	1375.1	1395.0	1395.0		_			252.	425	5206.
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7 HAXIMUM STURAGE

> 1399.2 RAKINUM STAGE 15

不会在身子特件是最	外接受热提的情况不够	丹县	*	* 外交面员会会会会		***	* *	*	****
			HYDROGE	YDROGRĄPH ROUTING	981				
LUCATION RUNERIS ROAD	ERIS RUAD								
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NORTAL DEPTH CHAINEL ROUTING

950,00 1375,00 958,00 1375,00 RL™TH 3EL 3510, 0,90400 CRUSS SECTION CONACHMATES...STAFELEV.STAFELEV.-FTC 0, 1503.09 1360.09 1360.09 1200.00 1360.00 2600.00 1500.00 ELMAT FLMAK 1375,0 1500,0 0.7500 0.0501 0.0500

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MAXIMUM STURAGE .

1324,8 MAXI 4U1 STAGE 1S ******

PEAK FLD4 A40) STARAGE (EUE DE FESTLD) SUMMARY FORMULTIPLE FLAM-RATIO ECONOMIC COMPUTATIONS FLAAS IN CUBIC FEET PER SECCHO (CUBIC NETENS PER SECOND) AFEA IN SQUARE MILES (SQUARE KILDAETERS)

ED TO FLOWS							
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SUMMARY OF DAN SAFETY ANALYSTS

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¥	DUP ATION NVES TUP HOURS 7.50 7.50	٥	TIVE HOURS 49.50 46.50	8	TIME HDURS 49.00 47.00	0	TIME HDDRS 49.50 47.00	0	TIBE HIUAS 50,00 47,00	6	TIRE HOURS 50,00
SPILLWAY CREST 1435.00 5714.	MAXIMUM DI DUTFLOW DI CFS CFS 1 1166, 11546,	STATIUN 1000	HAXIMUN STAGE, FT 1390.7 1391.8 1397.1	STATIUN 1063	HAXIMUII STACE/FT 1395,2 1395,1 1399,2	STATION 456	MAXIMUN STAGE,FT 1379,2 1381,9 1384,1	STATIUN 12960	HAXINUM STAGE, FT 1351, 6 1353, 5 1353, 5	STATIUN 23060	KAXINUH STAGE,FT 1316.0 1317.6 1324.3
	HAXI-1U4 STUKAGE AC-FT 7626. 3147.	PLAI! 1	MAXIRUN FLDJ,CFS 1184. 2898.	PLAH 1	MAXI::UN FLOW, CFS 1177, 2913, 11532,	PLAN 1	MAXIMUM FLDW, CFS 1165, 2901, 11573,	PLAN 1	HAXINUR FLOWCFS 1164, 2961, 11529,	PLAII 1	MAXINUH FLDH, CFS 1164. 2904.
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COMPUTATIONS		:
PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS	FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)	APEA IN SOUARE MILES (SOUARE MILES)

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SUMMARY OF DAM SAFETY ANALYSIS

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		:				!		:			
	TINE UF FAILURE HOURS 0. 45.00 42.50			:							· .
0F DAM 42.00 7886.	TIME OF MAX OUTFLOW HDURS 49.00 47.00 44.50								1 1		
407	DURATION OVER TOP HOURS 0. 1.19	1000	H H 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	. 69	F1444	260	10044 1004 1000 1000 1000	90	11 ME HOURS 50.00 47.50	080	100 44 40 00 00 00 00 00 00 00 00 00 00 0
SPILLWAY CRES 1435.00 5714.	MAXIMUM DUTFLOW CFS 1166. 42834.	STATION 10	MAXIMUM STAGE, FT 1390.7 1400.0	STATION 10	MAXIMUH STAGE,FT 1395.2 1402.9 1403.4	STATION 45	MAXIMUM STACE, FT 1979.2 1990.1	STATION 129	MAXIMUM STACE, FT 1351.6 1361.7 1362.7	STATION 230	MAXIMUM STAGE, FT 1916, 0 1928, 6 1929, 4
VALUE 6	HAX1MUM STORAGE AC-FT 7826. 7985.	LAN 1	MAXIMUM FLOW, CFS 1184. 42783.	LAN 1	HAXIMUM FLOWICFS 1177. 42785.	LAN 1	MAXIMUM FLOW, CFS 1165. 41428. 47250.	AN 1	MAXIMUM FLOW, CFS 1164. 39644.	AN 1	MAXIMUM FLOW, CFS 1164. 40217. 46790.
INITIAL 1435. 571	MAXIMUM DEPTH DVER DAM 0.29	14	44 00 00 00 00	14	A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	RATIO 0.40 0.80	14	AATIO 0.40 0.90 0.90	PL.	AA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
ELEVATION STORAGE OUTFLOW	R S E R V C C R R S E R V C C R R S E R V C C C R R C C C C C C C C C C C C C	:	:							;	
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APPENDIX D REPORTS FROM PRIOR INSPECTIONS

Form (Wat. 11-6-14-1600 16-1638)

NOTICE: After filling out one of these forms as completely as possible for each dam in your district, return it at once to the Conservation Commission, Albany.)

STATE OF NEW YORK

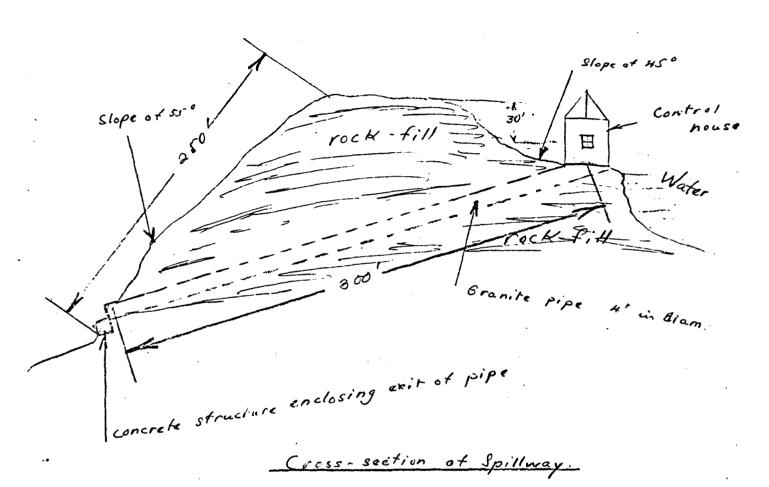
CONSERVATION COMMISSION ALBANY
Map 104-i DAM REPORT
Julie 25 1917
Conservation Commission, .
Division of Inland Waters.
Gentlemen:
I have the honor to make the following report in relation to the structure known as Reservoir forms the source of This days is situated upon the Eafon Give name of stream) n the Town of West Laton, TAPISON County,
about 27 miles from the Village or City of West Eaton
The distance dezur, stream from the dam, to the ro Wid Caston, (Up or down) (Give name of nearest important stream or of a bridge) s about 24 miles (State distance)
The dam is now owned by Lifen Water Walls (State) (Give name and address in full)
and was built in or about the year, and was extensively repaired or reconstructed
As it now stands, the spillway portion of this claim is built of Masonry, concrete or tumber) and the other portions are built of Masonry (well really as a result of Masonry).
As nearly as I can learn, the character of the foundation bed under the spillway portion

of the dam is grand and and under the remaining portions such foundation bed is mud and with.

(In the space below, make a third sketch showing the general plan of the dam, and its approximate position in relation to buildings or other conspicuous objects in the vicinity.) 50 wide rucks piled and camented rejether

(In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the stream bed, its thickness at the top, and thickness at the bottom, as nearly as you can learn.)

(ross-section of Dam



This should be part

sncrete instead

of masonry

se under the

nasonry is nothing but sand and grave/
nd of course water eats into this.

In the rest are just setting

Th	area res	ervoir sis7	00 acres	
weir po	ortion, is about 200	2	feet long, an	d the crest of the spillway
about	16	fee	t below the top of t	he dam.
Th	ne number, size and locat	ion of discha	rge pipes, waste pip	es or gates which may be use
for drav	wing off the water from b	ehind the da	m, are as follows:	They is an disals
fufe	and on shi	away.	The pipe	i about 6' in also
At	the time of this inspectio	n the water l	evel above the dam	wasi
	the crest of the spillway.			•
(State brie		n your judgment,	this dam is in good conditio	n, or bad condition, describing particular
	The	o reserv	vois io in go	od condition. V
funk.	surrounding	body of	twales are of	' ligh, rock fi
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APPENDIX E

REFERENCES

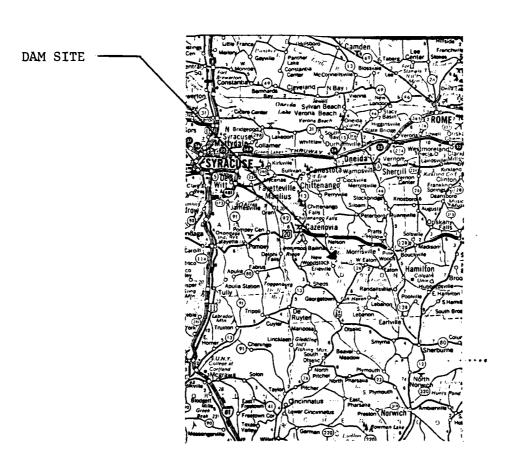
APPENDIX E

REFERENCES

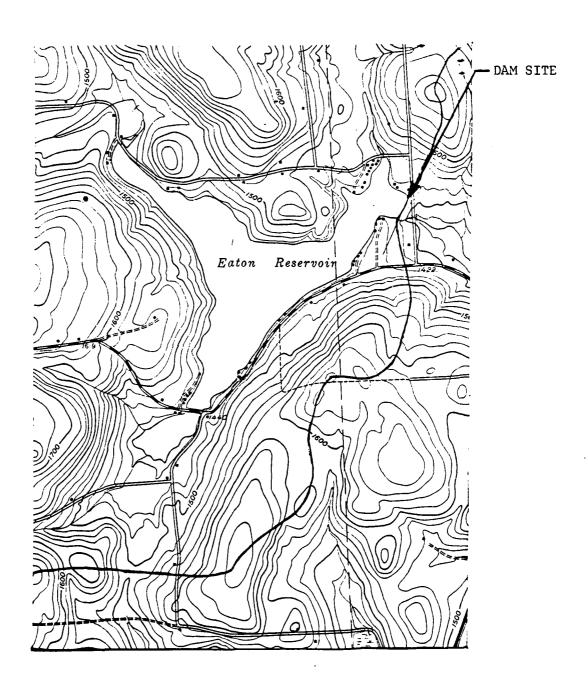
- 1) U.S. Department of Commerce; Weather Bureau; <u>Hydrometeorological Report No. 33</u> - Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1,000 Square Miles and Durations of 6, 12, 24, and 48 Hours, April 1956.
- 2) H.W. King and E.F. Brater, <u>Handbook of Hydraulics</u>, 5th edition, McGraw-Hill, 1963.
- 3) University of the State of New York, <u>Geology of New York</u>, Education Leaflet 20, Reprinted 1973.
- 4) Elwyn E. Seelye, <u>Design</u>, 3rd edition, John Wiley and Sons, Inc., 1960.
- 5) U.S. Department of the Interior, Bureau of Reclamations; Design of Small Dams, 2nd edition (rev. reprint), 1977.

APPENDIX F

DRAWINGS



VICINITY MAP
EATON BROOK RESERVOIR DAM
I.D. No. N.Y.352



TOPOGRAPHIC MAP
EATON BROOK RESERVOIR DAM
I.D. No. N.Y. 352

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REGION NO. 2 COUNTY Mod 150 A

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION SOIL MECHANICS BUREAU

P.I.N. 1.1. 12:01. 70/1

SUBSURFACE EXPLORATION LOG

PROJECT FOTO: BAOOK Dam Tomestiga Tion

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO BIDDERS ONLY THAT THEY MAY HAVE ACCESS TO IDENTICAL INFORMATION AVAILABLE TO THE STATE, IT IS PRESENTED IN GOOD FAITH BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGEMENT OF THE BIDDER.

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NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/6 13/13 NATIONAL DAM SAFETY PROGRAM. EATON BROOK RESERVOIR DAM (INVENTO--ETC(U) FEB 80 6 KOCH AD-A086 179 UNCLASSIFIED 2 OF 2 END 8-80 DTIC

COUNTY ACA I SOIL

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION SOIL MECHANICS BUREAU

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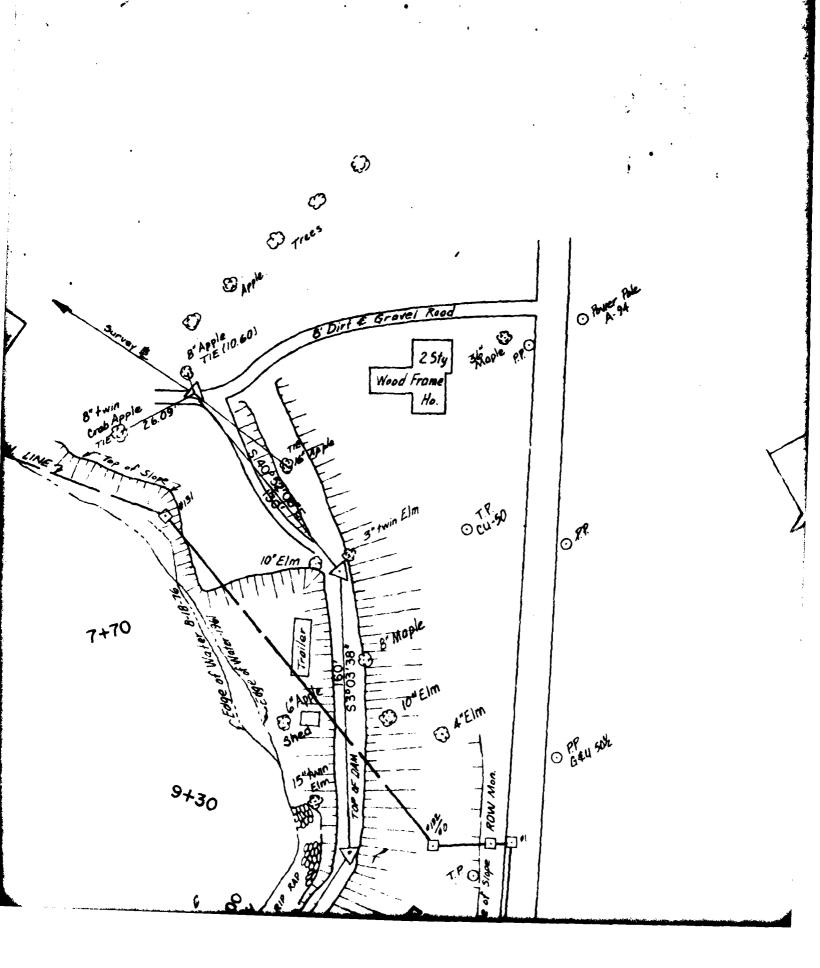
SUBSURFACE EXPLORATION LOG

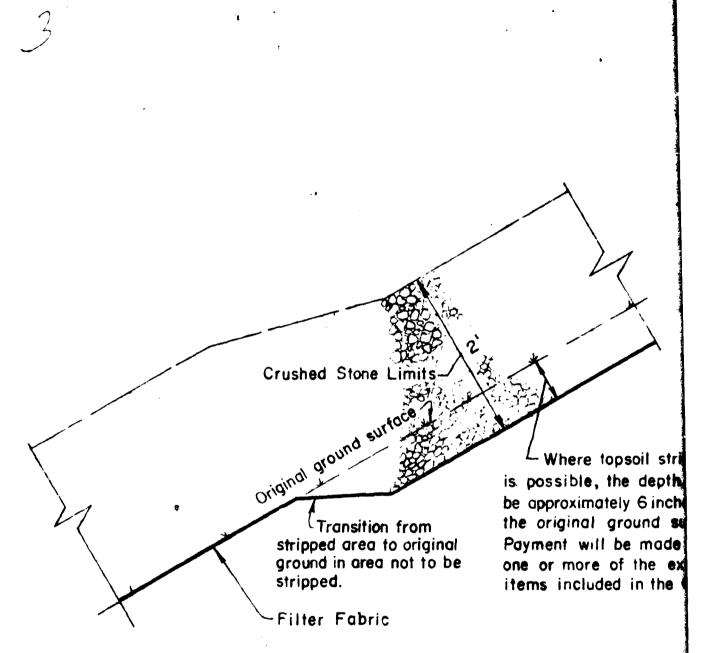
PROJECT FOTON Brook DOW FUN-TIGETION

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THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO BIDDERS ONLY THAT THEY MAY HAVE ACCESS TO IDENTICAL INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGEMENT OF THE BIDDER.

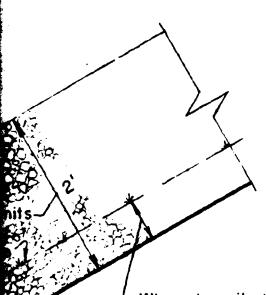
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,	DATE /- W-77		FIELD DESCRIPTION	G.W. ELEV. A. 2	IA. OFFICE
-	ВҮ	3	DEPTH SAMPLE	SURF. ELEV.	חטרב אס.
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1	ł		2		רוועב מ אוא.
				ရ	7
	DATE		FIELD DESCRIPTION	G.W. ELEV.	Orrael





Wherever topsoil stripping is eliminated, the Filter Fabric shall be placed directly on the original ground surface.

TREATMENT DETAIL FOR STRIPPING TRANSITION NO SCALE



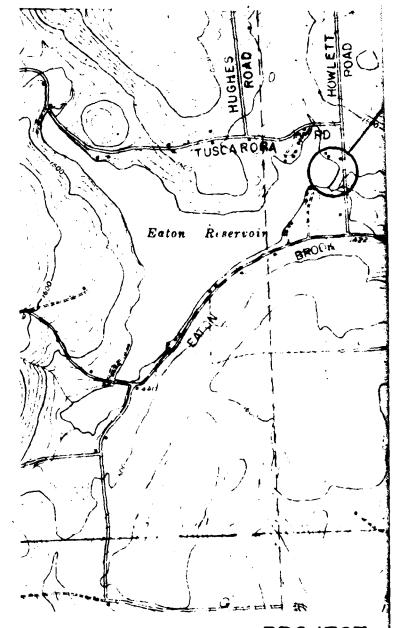
Where topsoil stripping is possible, the depth should be approximately 6 inches below the original ground surface. Payment will be made under one or more of the excavation items included in the Contract.

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STRIPPING TRANSITION CALE



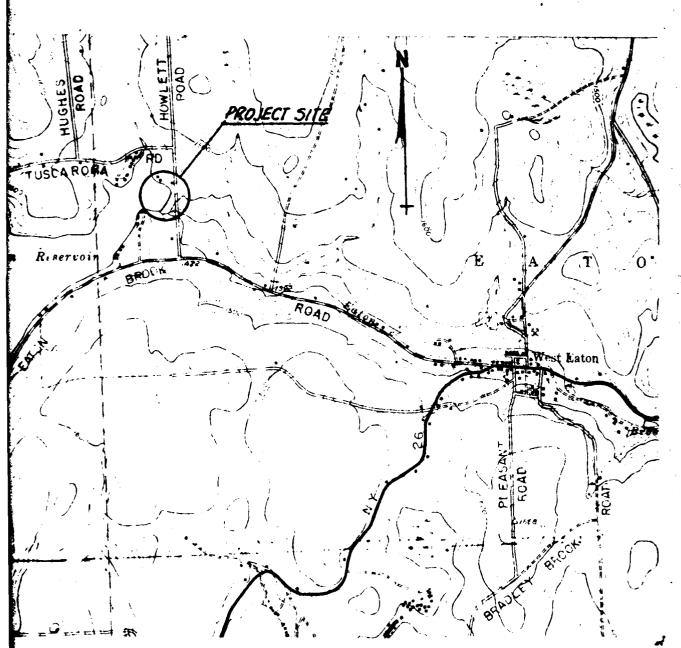
PROJECT

SCAL

, NOTES.

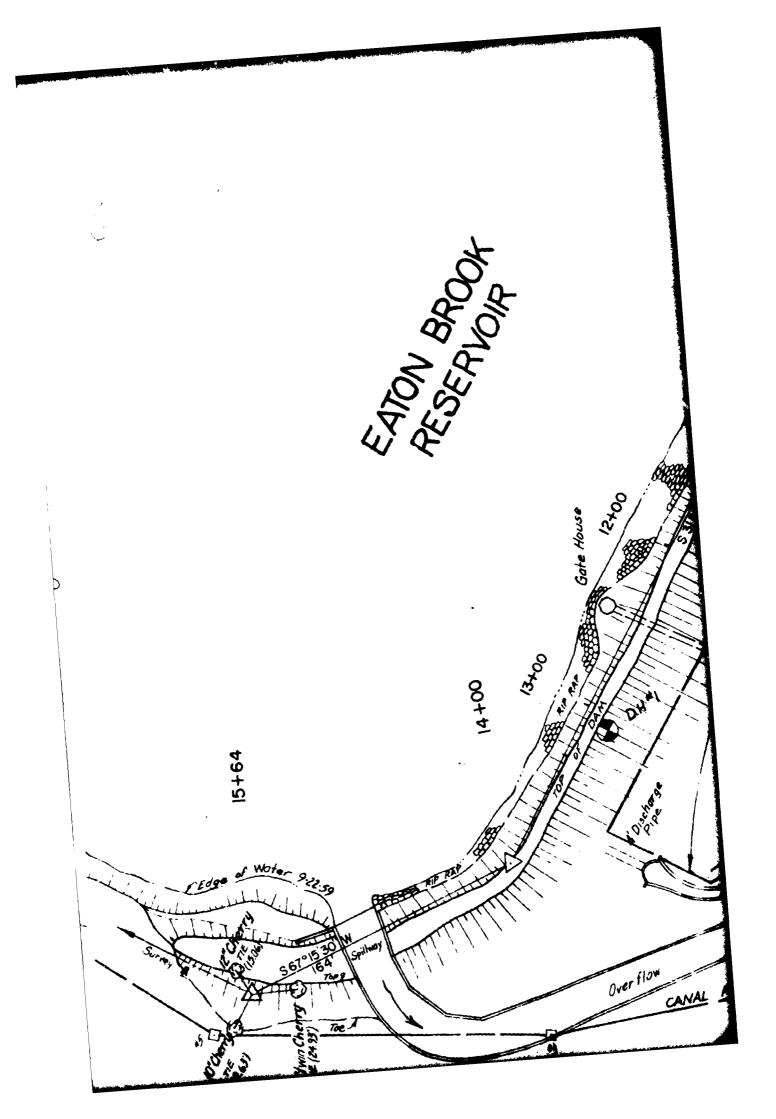
1. See Special Notes in the Proposal for progress of work a

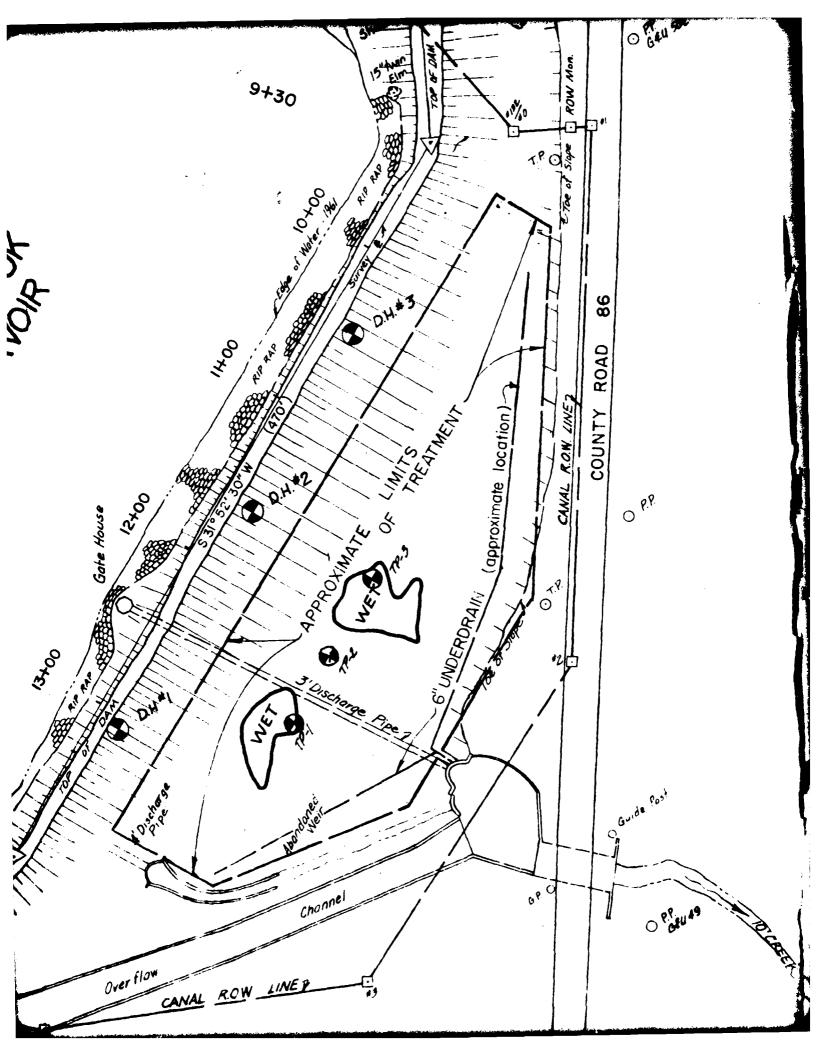
FED. ROAD REG. NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.	TOTAL!
1	N.Y.		2	6
EATO	N BRC	OK RESERVOIR		
MADIS	SON C	COUNTY		



PROJECT LOCATION MAP

for process of work and excavation procedures





TRANSITION



SCALE: 1"= 2,000"

NOTES.

- 1. See Special Notes in the Proposal for progress of work and excavation pe
- 2. Limits shown for filter treatment and the locations of underdrain pipe are locations will be determined during construction by the Regiona! Soils Engineer or
 - 3. The minimum width of Plastic Filter Fabric shall be 24 feet
 - 4. Locations of the drill holes and test pits are approximate. Refer to the table
- 5. It is important to note that stripping the topsoil may cause potentially harm to commencing stripping operations, small amounts of the topsoil is to be removed damaging seepage forces are encountered. If any large volume flows are noted, extreatment section directly on the existing surface.
 - 6. Filter material for the underdrain pipe (at both sites) shall be Crushed Stone fi

	LABORATORY GRAIN SIZE DISTRIBUTION TEST												
TEST	REPRESENTATIVE	% PASSING BY WEIGHT U.S. STANDARD SIEVE											
PIT NO	SAMPLE DEPTH - FEET	3"	2"	1"	1/2"	1/4"	#4	#10	#20	# 4			
TP-1	0-2.5	82.2	71.9	5 3.7	46.5	42.4	40.2	35.7	32.1	29.			
*1	2.5-5.0	52.0	44.4	40.7	36.8	34.4	32.3	29.5	27.3	26.			
TP-2	0 - 2.5		100	98.8	95.8	93,7	91.8	87.4	84.9	83.			
н	2.5 - 5.0	86.8	85.3	76.7	68.4	63.2	59.7	52.0	46.8	44.			
TP-3	0 - 3.0'					100	98.3	95.6	92.7	89.			

NOTE: The test method used for these grain size analyses conforms to A.S.T.M. Designation D422 Technical Manual No. TM(s) 64-2.

SYMBOLS

Crushed stone - #1,283A size stones in approx. equal amounts.

Filter Fabric

EATON RE

ST DEPART

NO

PROJECT LOCATION MAP

SCALE: |"= 2,000"

or progress of work and excavation procedures.

I the locations of underdrain pipe are approximations only The actual limits and ion by the Regiona! Soils Engineer or his representative.

Fabric shall be 24 feet

its are approximate. Refer to the table below for test pit soil analyses

the topsoil may cause potentially harmful seepage at the downstream toe. Prior amounts of the topsoil is to be removed in several areas to assure that no f any large volume flows are noted, eliminate the stripping and construct the ace.

(at both sites) shall be Crushed Stone furnished and paid for under Item 623.03.

IZE (ZE DISTRIBUTION TEST SUMMARY												
BY W	- HYDROMETER												
1, "	1/4"	44 #	-410	44.00	44.40	400	4100	4000		ANALYSIS			
_'/2	1/4	# 4	**10	#20 #40		# 60 #10		# 200	. 02mm	,002mm			
46.5	42.4	40.2	35.7	32.1	29,8	28.1	26.8	25,4	16.2	4,9			
3 6.8	34.4	32.3	29.5	27.3	26.0	25.1	24.3	23,2	14.6	4.7			
95.8	93.7	91.8	87.4	84.9	83.1	81.2	79.3	77.2	57.6	14.7			
68.4	63.2	59.7	52.0	46.8	44.1	42.1	40.3	37.5	23.0	7.7			
	100	98.3	95.6	92.7	89.7	84,5	78.6	74.7	49.3	14.0			

is conforms to A.S.T.M. Designation D422 as modified by the Bureau of Soil Mechanics

NO AS BUILT REVISIONS

EATON RESERVOIR PLAN

STATE OF NEW YORK

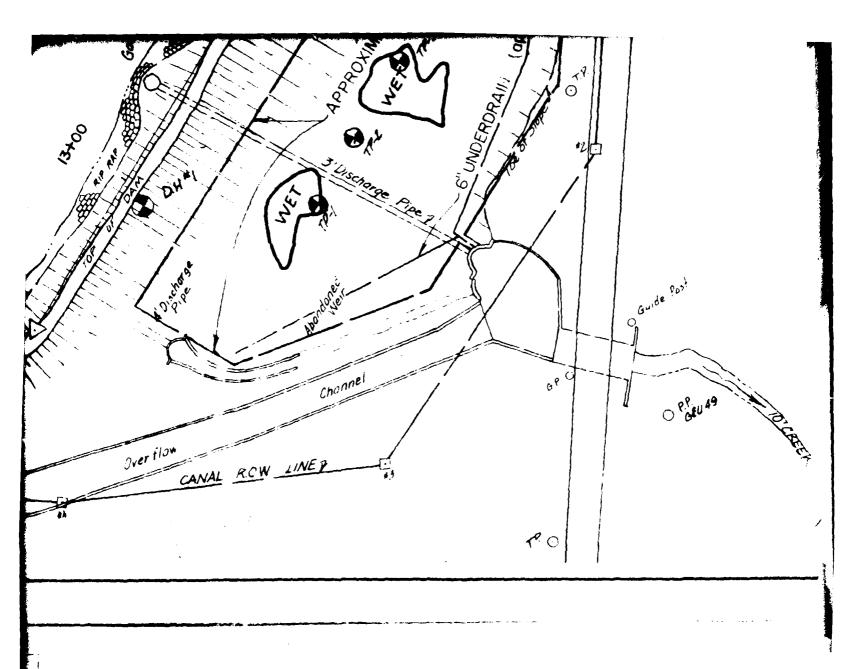
,283A size equal amounts

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And the second s



TP-3 0-3.0 100 98.3 95.

NOTE: The test method used for these grain size analyses conforms to A.S.T.M. Desi Technical Manual No. TM(s) 64-2.

SYMBOLS

Crushed stone - #1,283A size stones in approx. equal amounts.

Filter Fabric

◆ DH

Drill Holes

TP Test Pits

EAT

DRAWIN EBP

	9076		32.3	29.5	27.3	20.0	25.1	24.5	23.Z	14.6	4:7	r
98.8	95.8	93.7	91.8	87.4	84.9	83.1	81,2	79.3	77.2	57.6	14.7	١
76.7	68.4	63.2	59.7	52.0	46.8	44.1	12.1	40.3	37.5	23.0	7.7	ļ
		100	98.3	95.6	92.7	89.7	84,5	78.6	74.7	49.3	14.0	

analyses conforms to A.S.T.M. Designation D422 as modified by the Bureau of Soil Mechanics

NO AS BUILT REVISIONS

OLS

one - # 1,2 8:3A size
approx. equal amounts.

EATON RESERVOIR PLAN

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION

EBP-1 45 Shown 3/28/18 REGION 2

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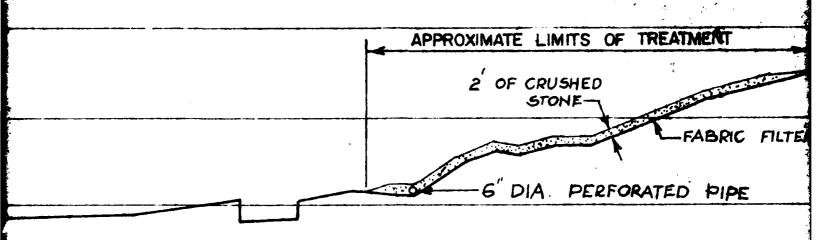
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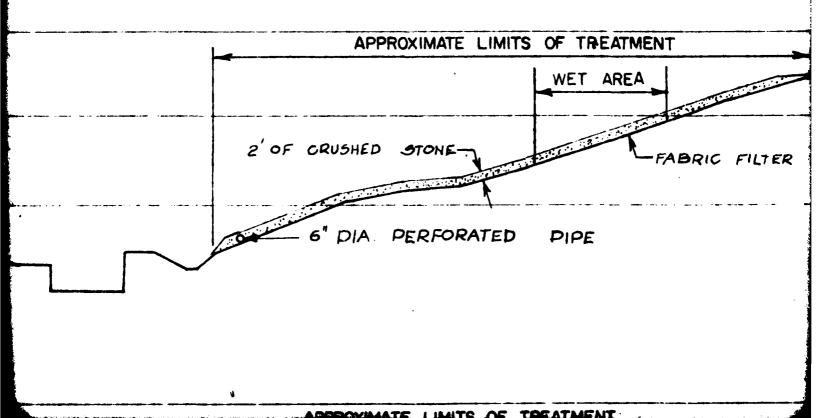
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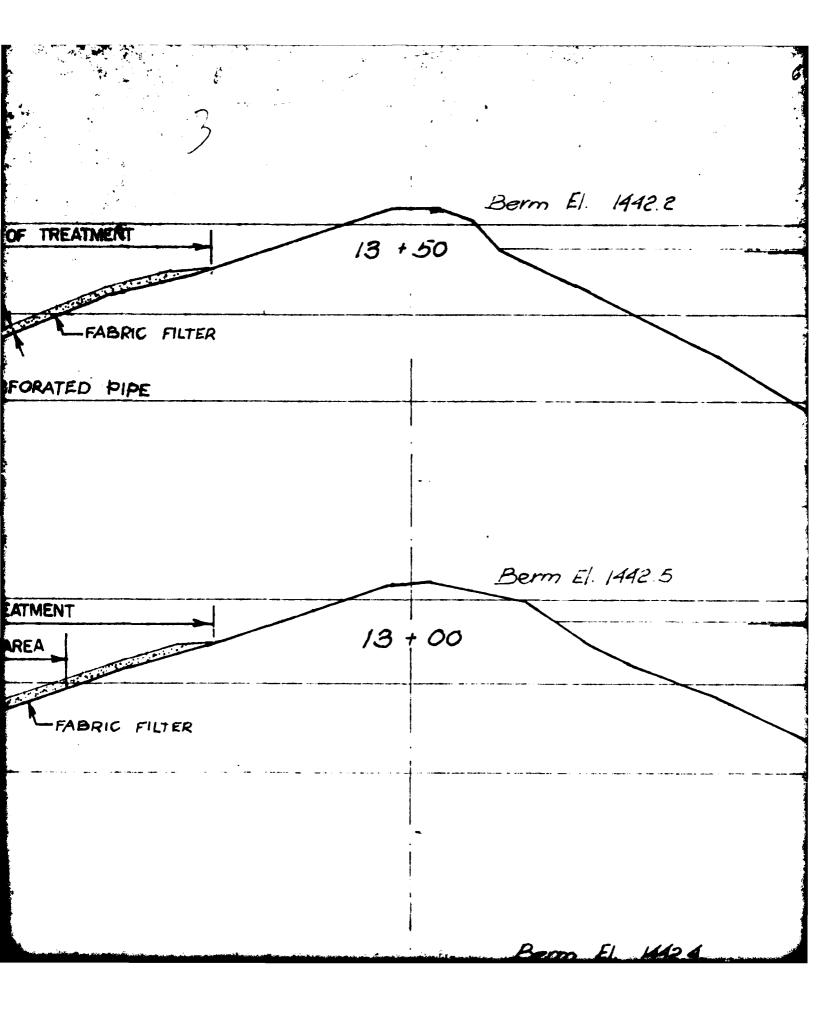
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	EATON	BROOK	RE	SERVO	3 2 3 3	ē,	41			
	MADIS		UNT	Y	+			. 44		

NOTES:

SECTIONS 10+00, 10+50, 11+00 ARE SIMILAR TO THOSE SHOWN ON THIS SHEET

TREATMENT AREAS FOR THE ABOVE STATIONS ARE AS SHOWN ON SHEET NO 2.

PAYMENT FOR TREATMENT ITEMS:
CRUSHED STONE SHALL BE PAID FOR UNDER ITEM 623.03.
FABRIC FILTER SHALL BE PAID FOR UNDER ITEM 17203.98.
6" DIA. PERFORATED PIPE SHALL BE PAID FOR UNDER ITEM 12605.0702.

SEE SPECIAL NOTES REGARDING STRIPPING SURFACE UPON WHICH FILTER FABRIC IS TO BE PLACED.

SEE SHEET NO.6 FOR EXCAVATION PAYMENT.

1440.00

1420.00

1400 00

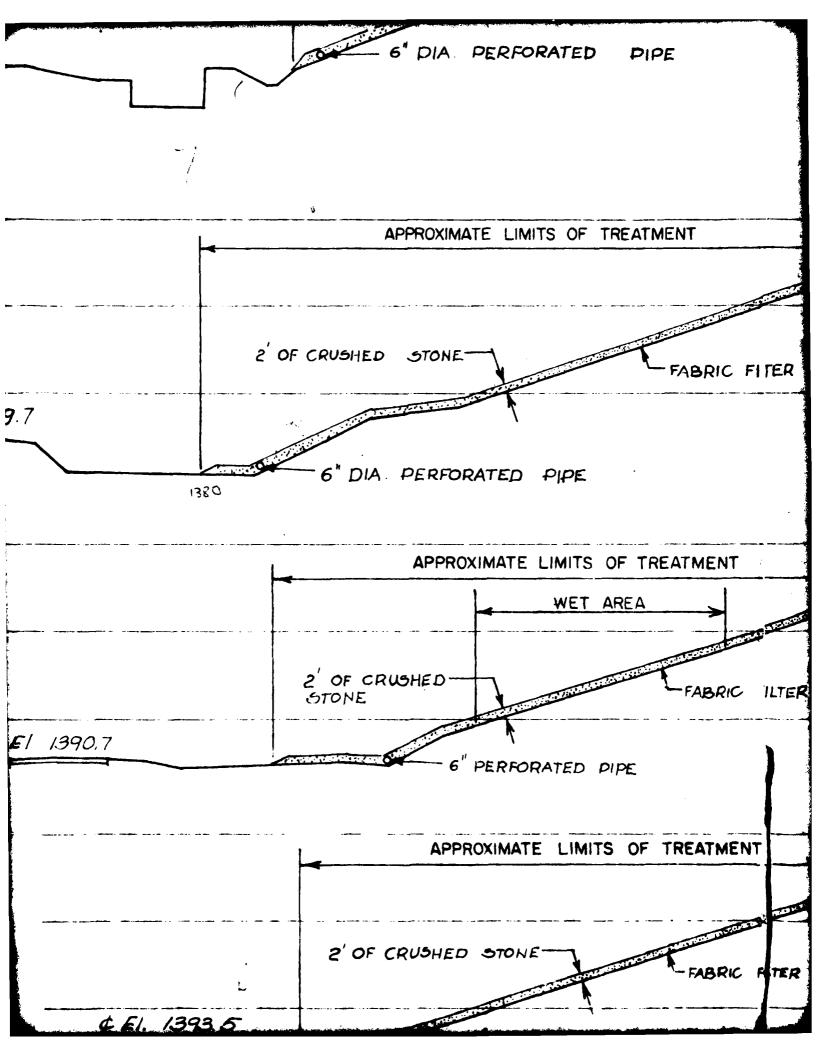
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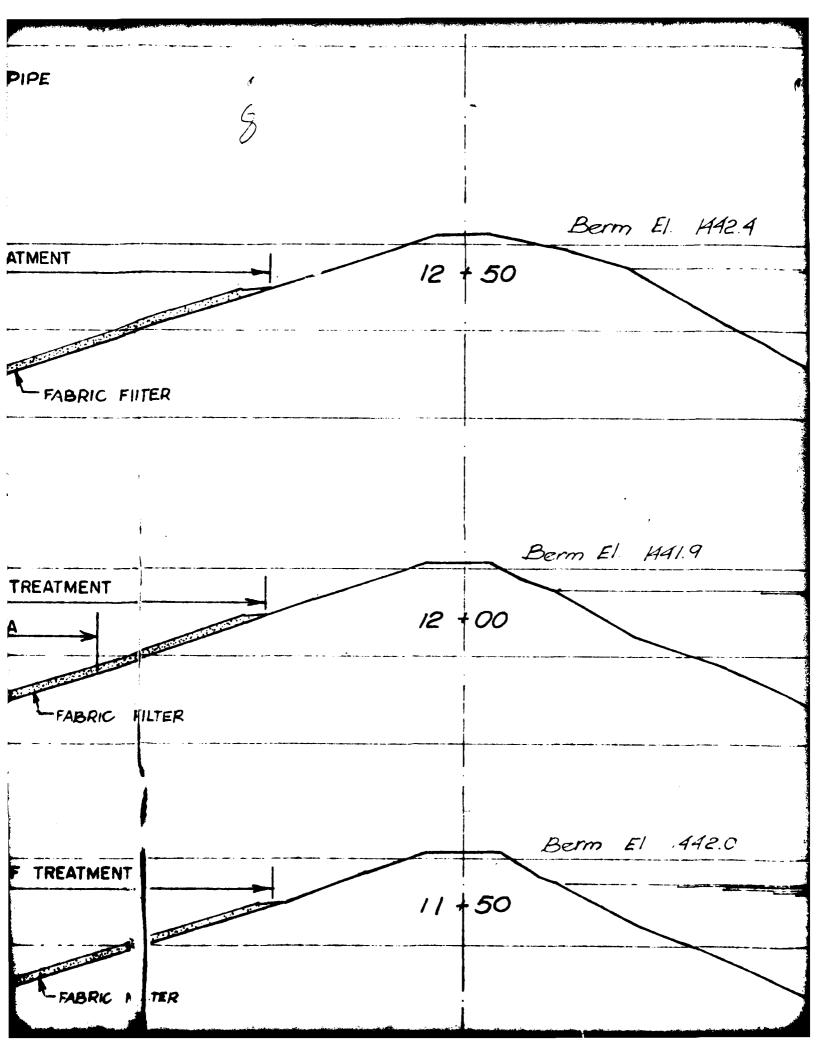
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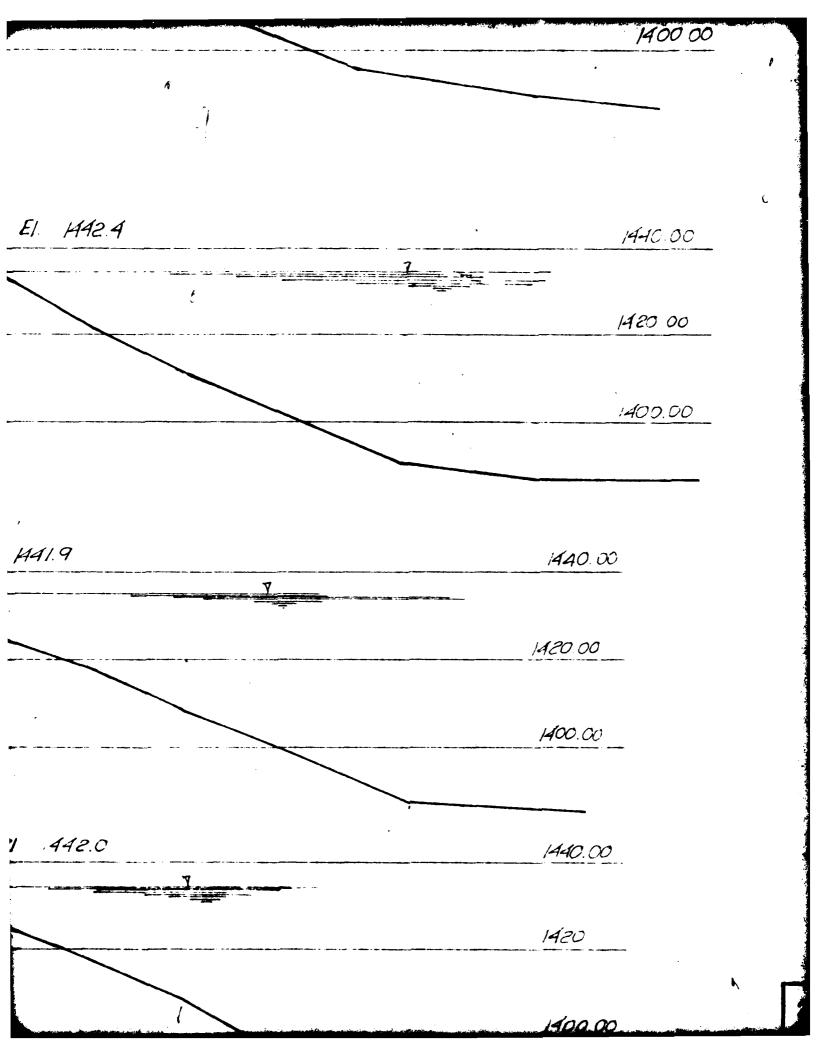
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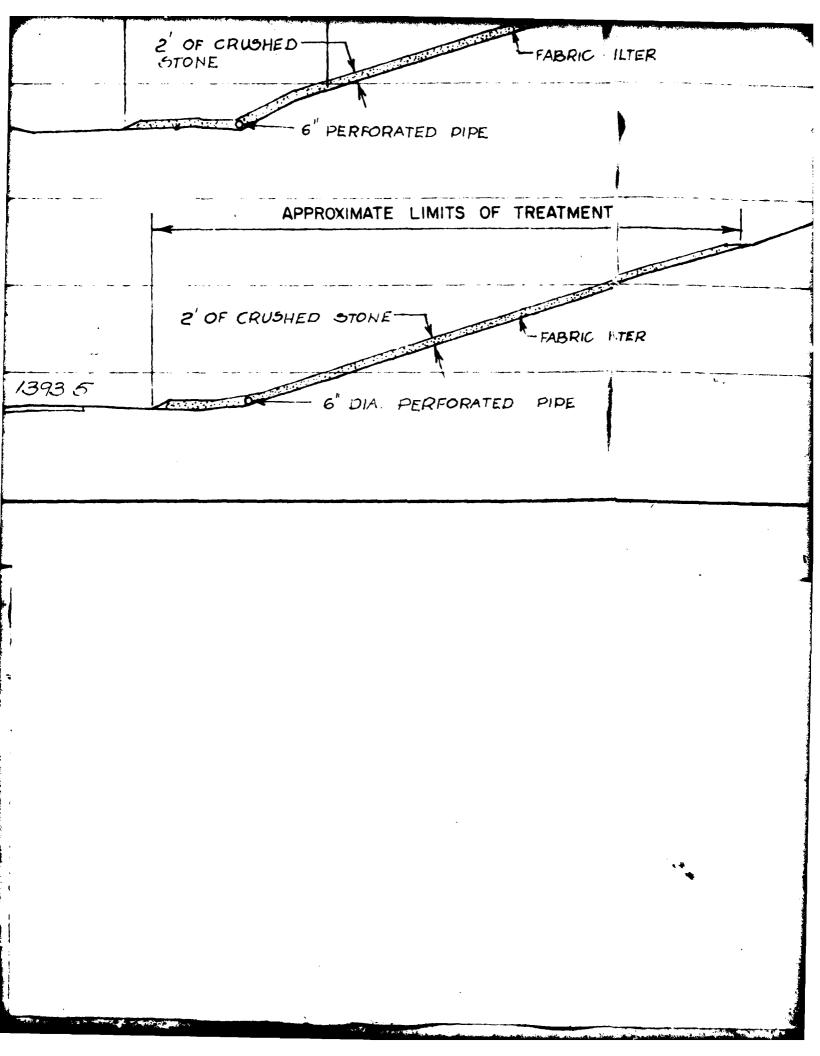
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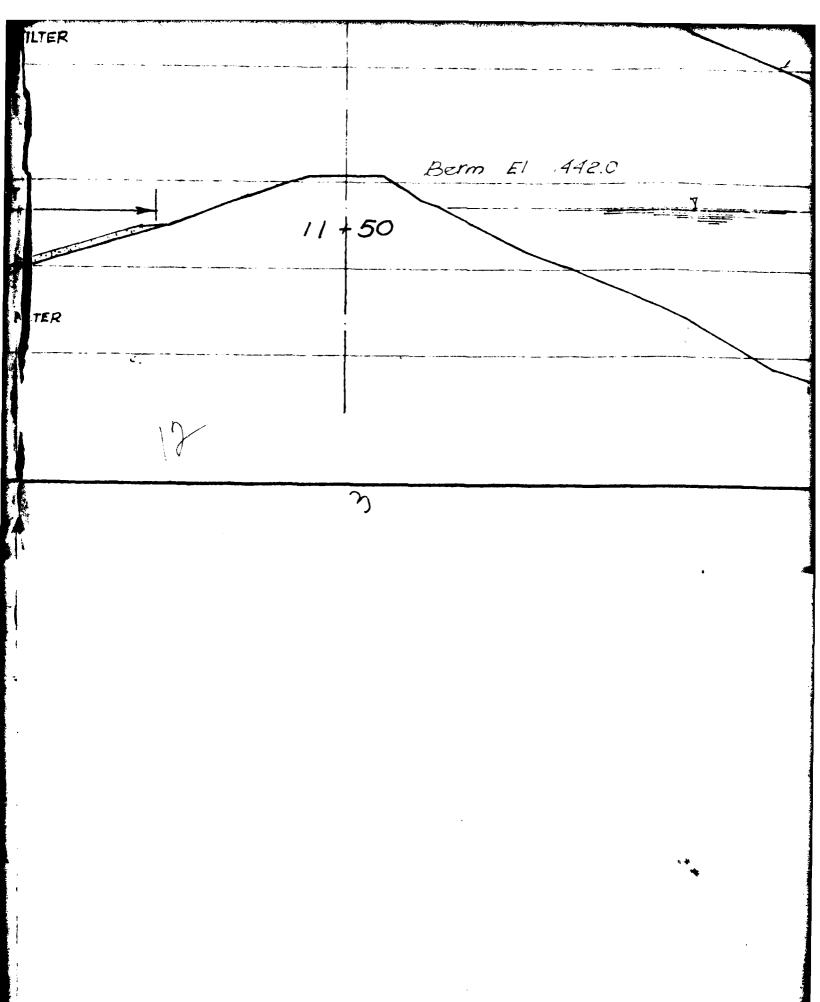


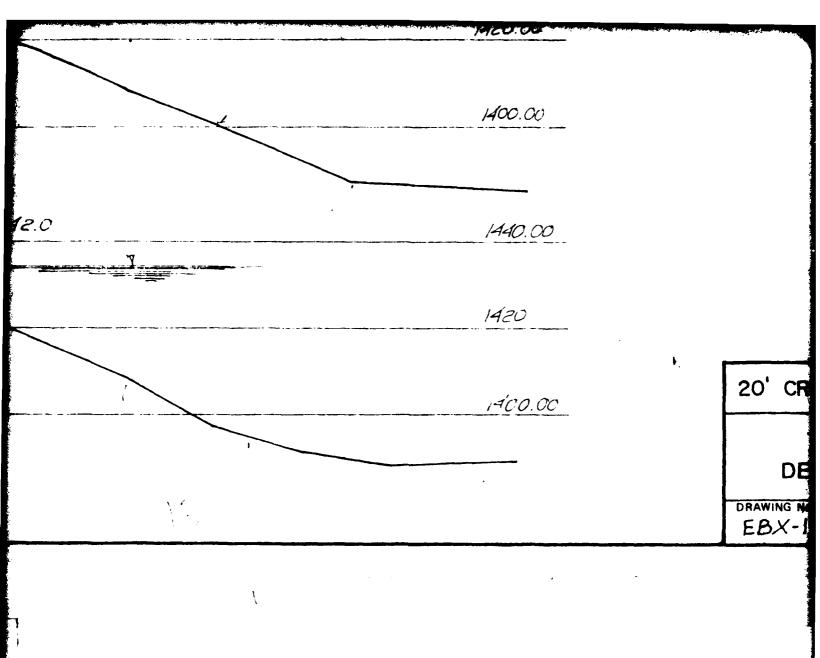




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0.00 NO AS BUILT REVISION 20' CROSS SECTIONS 0.0C STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION. SCALE HOR 1"= 20 VER 1"= 20 DRAWING No. DATE REGION 2 4/78 EBX-1